

WHAT IS CLAIMED IS:

1. A vertically and horizontally adjustable lip assembly for an extrusion die, comprising:

a first die lip having a first end;

a first end block adjacent to said first end of said first die lip;

5 a second die lip having a first end and adjacent to and spaced from said first die lip and said first end block to define a die gap between said first die lip and said first end block and said second die lip;

a second end block adjacent to said first end of said second die block;

10 a first adjustment mechanism coupled to said first die lip for moving said first die lip and said first end block parallel to said second die lip and said second end block to adjust extrudate width; and

15 a second adjustment mechanism coupled to said first die lip for moving said first die lip and said first end block perpendicular to said second die lip and said second end block to adjust extrudate thickness.

20 2. The vertically and horizontally adjustable lip assembly for an extrusion die claimed in claim 1 further comprising a third adjustment mechanism coupled to said second die lip for moving said second die lip and said second end block parallel to said first die lip to adjust extrudate width.

25 3. The vertically and horizontally adjustable lip assembly for an extrusion die claimed in claim 1 further comprising a fourth adjustment mechanism coupled to said second die lip for moving said second die lip and said second end block perpendicular to said first die lip and said first end block to adjust extrudate thickness.

4. The vertically and horizontally adjustable lip assembly for an extrusion die claimed in claim 1 wherein said lip assembly is mounted on an outside surface of said die, and said first adjustment mechanism and said second adjustment mechanism being operable during operation of said extrusion die to adjust said width and thickness of 30 said extrudate.

5. An adjustable lip assembly for an extrusion die for adjusting the width and thickness of extrudate during operation of the die, comprising:

a first die lip having a first end;

a first end block adjacent to said first end of said first die lip;

5 a second die lip parallel and adjacent to said first die lip and said first end block, said second die lip spaced from said first die lip to define a gap therebetween, said second die lip including a first end;

a second end block adjacent to said first end of said second die lip;

10 a first mechanism for moving one of said first die lip and said first block and said second die lip and said second block parallel to the other of said first die lip and said first block and said second die lip and said second block during operation of the die to widen and narrow the width of said gap; and

15 a second mechanism for moving one of said first die lip and said first block and said second die lip and said second block perpendicular to said other of said first die and said first block and said second die lip and said second block to increase and decrease the height of said gap.

20 6. The adjustable lip assembly claimed in claim 5, comprising a third mechanism for moving vertically the other of said first die lip and said first block and said second die lip and said second block not moved by said first mechanism.

7. The adjustable lip assembly claimed in claim 5, comprising a fourth mechanism for moving horizontally the other of said first die lip and said first block and said second die lip and said second block not moved by said second mechanism.

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8. An adjustable foam die assembly, comprising:

a top adaptor;

a bottom adaptor;

30 a top die lip, said top die lip mounted on said top adaptor to allow vertical and horizontal movement of said top die lip relative to said top adaptor;

a bottom die lip, said bottom die lip mounted on said bottom adapter to allow vertical and horizontal movement of said bottom die lip relative to said bottom adaptor;

a first horizontal adjustment mechanism coupled to said top die lip for moving said top die lip horizontally relative to said top adaptor and said bottom lip;

a second horizontal adjustment mechanism coupled to said bottom die lip for moving said bottom die lip horizontally relative to said bottom adaptor and said top lip;

5 a top vertical adjustment mount secured to said top lip for vertically adjusting said top lip relative to said bottom lip and said top adaptor; and

a bottom vertical adjustment mount secured to said bottom lip for vertically adjusting said bottom lip relative to said top lip and said bottom adaptor.

10 9. The adjustable foam die assembly claimed in claim 8 further comprising a first end block mounted adjacent to said top die lip and moveable horizontally and vertically therewith by said first horizontal adjustment mechanism and said top vertical adjustment mount, and a second end block mounted adjacent to said bottom die lip and moveable horizontally and vertically therewith by said second horizontal adjustment mechanism and said bottom vertical adjustment mount.

15 10. A method of adjusting a lip assembly for an extrusion die to adjust the width and height of extrudate, comprising:

20 providing a die with a first die lip mounted on said die for horizontal and vertical movement relative to said die;

providing a second die lip mounted on said die adjacent to said first die lip for horizontal and vertical movement relative to said die, and said first die lip;

providing a first horizontal adjustment mechanism coupled to said first die lip; and

25 actuating said first horizontal adjustment mechanism to move said first die lip horizontally relative to said die and said second die lip to adjust the width of extrudate.

11. The method of adjusting a lip assembly for an extrusion die set forth in claim 10, further comprising:

30 providing a second horizontal adjustment mechanism coupled to said second die lip; and

actuating said second horizontal adjustment mechanism to move said second die lip horizontally relative to said first die lip and said die to adjust the width of extrudate.

5 12. The method of adjusting a lip assembly for an extrusion die set forth in claim 10, further comprising:

providing a top vertical adjuster mounted on said first die lip; and

actuating said top vertical adjuster to move said first die lip vertically relative to said die and said second die lip to adjust the height of said extrudate.

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13. The method of adjusting a lip assembly for an extrusion die set forth in claim 10, further comprising:

providing a bottom vertical adjuster mounted on said second die lip; and

15 actuating said bottom vertical adjuster to move said second die lip vertically relative to said die and said first die lip to adjust the height of said extrudate.

14. A method of adjusting the width and thickness of an extrudate from a die while the die is operating, comprising:

providing a die for producing extrudate;

20 providing a top die lip;

providing a top mounting assembly on said die for mounting said top die lip to said die to allow horizontal and vertical movement of said top die lip relative to said die;

providing a bottom die lip;

25 providing a bottom mounting assembly on said die for mounting said bottom die lip to said die to allow horizontal and vertical movement of said bottom die lip relative to said die;

mounting said top die lip on said top mounting assembly;

30 defining an adjustable gap between top lip and said bottom lip;

providing a top horizontal adjustment mechanism coupled to said top die lip;

providing a top vertical adjustment mechanism coupled to said top die lip; and

actuating said top horizontal adjustment mechanism to move said top die lip horizontally relative to said bottom die lip to adjust the width of extrudate.

15. The method of adjusting the width and thickness of an extrudate claimed in
5 claim 14, comprising:

actuating said top vertical adjustment mechanism to move said top die lip vertically relative to said bottom die lip to adjust said gap and the thickness of extrudate.

10 16. The method of adjusting the width and thickness of an extrudate claimed in
claim 14, comprising:

providing a bottom horizontal adjustment mechanism coupled to said bottom die lip; and

15 actuating said bottom horizontal adjustment mechanism to move said bottom die lip horizontally relative to said top die lip to adjust the width of extrudate.

17. The method of adjusting the width and thickness of an extrudate claimed in
claim 14; comprising:

20 providing a bottom vertical adjustment mechanism coupled to said bottom die lip; and

actuating said bottom vertical adjustment mechanism to move said bottom die lip vertically relative to said top die lip to adjust the thickness of extrudate.